

# Dualband MW/LW Strained Layer Superlattice Focal Plane Arrays for Satellite-Based Wildfire Detection, Phase II

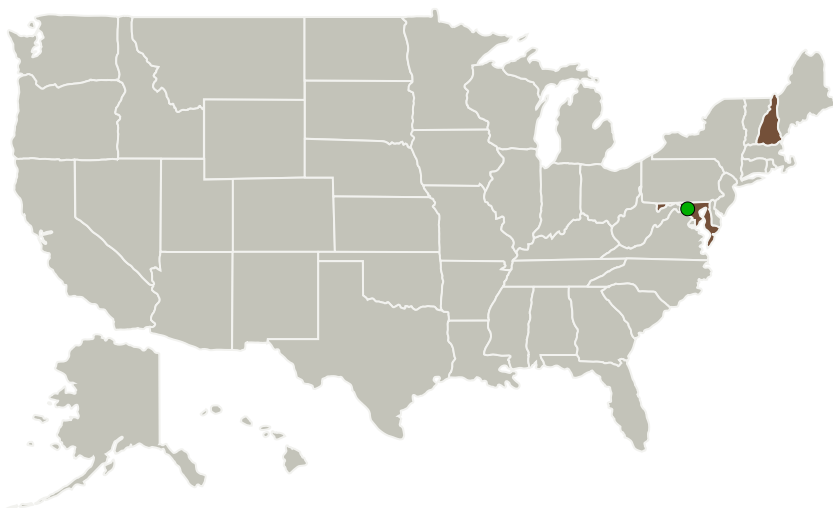
Completed Technology Project (2015 - 2017)



## Project Introduction

Infrared focal plane arrays (FPAs) based on Type-II strained layer superlattice (SLS) photodiodes have recently experienced significant advances. In Phase I we developed and delivered to NASA a 320x256 DUALBAND FPA integrated in a dewar cooler assembly (IDCA) that produces simultaneous and spatially-registered imagery in two spectral bands, namely, a fire channel in the 3-5 micron window and a thermal channel covering 8-12 microns. Such FPAs are known to be uniquely effective for detecting wildfires either locally from aircraft or globally from satellites in low earth orbit. The performance of SLS detectors now rivals that of mercury cadmium telluride but at a fraction of the cost. Their high quantum efficiency combined with the advantages of two-color imagery and data interpretation will permit the detection of wildfires with much reduced false alarm rates. The same devices will also enhance NASA's capabilities in a host of other satellite and airborne Earth-observing missions devoted to long-term global observations of the land surface, biosphere, atmosphere and oceans. They will also be instrumental in supporting future Space Science missions aimed at studying distant galaxies and discovering potentially habitable planets orbiting other stars. In Phase II we will expand dualband FPA format to 1280x1024 (12 micron pitch) and develop and deliver both a compact IDCA and camera so that NASA can field-test this promising new sensor technology for its wildfire-detection and other remote-sensing missions.

## Primary U.S. Work Locations and Key Partners



Dualband MW/LW Strained Layer Superlattice Focal Plane Arrays for Satellite-Based Wildfire Detection, Phase II

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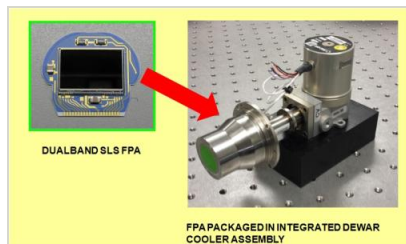
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Organizations Performing Work	Role	Type	Location
QmagiQ, LLC	Lead Organization	Industry	Nashua, New Hampshire
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	New Hampshire

## Images



## Briefing Chart

Dualband MW/LW Strained Layer Superlattice Focal Plane Arrays for Satellite-Based Wildfire Detection Briefing Chart  
(<https://techport.nasa.gov/image/127200>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

QmagiQ, LLC

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

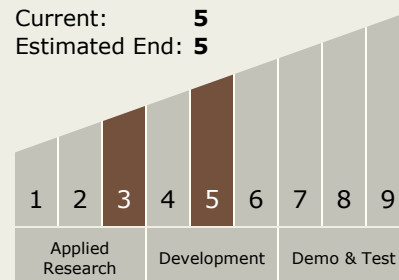
Carlos Torrez

**Principal Investigator:**

Mani Sundaram

## Technology Maturity (TRL)

Start: 3  
Current: 5  
Estimated End: 5



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## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
    - └ TX08.1.1 Detectors and Focal Planes

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System